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ABSTRACT

This document includes four papers on library school and other training aspects which were presented at the 1986 conference of the International Federation of Library Associations (IFLA). In "Meeting the Challenge of the High Tech Information Age--The Recent Development of Library and Information Science Education in the People's Republic of China," Weiming Li (Australia) describes the expansion of library schools and curricula to meet the challenge of training library and information personnel in new technologies. In "Motivation--The Illusive Link in Continuing Education," B. E. Sheldon (United States) discusses motivating administrators to encourage continuing education participation, motivating librarians to attend continuing education events, and developing continuing education activities that motivate people to learn and to change patterns of behavior. A questionnaire distributed to members of the audience prior to the presentation is included. "Preparing Librarians for the 21st Century--Implications for Third World Countries," by Rosa M. Vallejo (Philippines), considers the role of libraries in the information-based society of the future and the need for library education to concentrate on both traditional core subjects and the new field of information technology. Finally, in "The Impact of Technology on the Education and Training for Librarianship," Masanobu Fujikawa examines methods of incorporating information technology into the library education curriculum. (KM)

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Meeting the Challenge of the High Tech Information Age --The Recent Development of Library and Information Science Education in the People's Republic of China

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MEETING THE CHALLENGE OF THE HIGH TECH INFORMATION AGE

--The Recent Development of Library and Information Science Education in the People's Republic of China

LI Weiming

GENERAL INTRODUCTION

Since late in the 1970's, rapid advances in science and technology, particularly in computer science, have resulted in great progress in ocean engineering , biological engineering and space engineering, and these achievements will be spreading to all areas. The American futurist, John Naisbett, calls our time an "information age" which, in the future, will be viewed as just a significant revolution as the industrial revolution was in its time.

With the popularity and development of computer science, changes in the organizational use of information and expansion of the theories of information transfer have resulted in a continual state of growth and change in library and information science education. Educators in many schools of library and information science (LIS) all over the world realize that they have an obligation to meet the challenges of the high tech information age via reforming the frame, the curricula and the characteristics of LIS education. The People's Republic of China is no exception.

The purpose of this paper, however, is to discuss the recent development of LIS education in China so as to give a general idea about China's education system of LIS and what Chinese colleagues have done and will do to meet the need for training library and information personnel to keep up with new technologies.

BRIEF HISTORY

Library education in China has quite a long history. As early as 1920, the first library school, a department of Boone College, was established by the American librarian, Mary Elizabeth Wood, who brought the concept of modern librarianship to China and made great contributions to the development of China's future library education. The department became the independent Boone Library School in 1929 and awarded more than 200 degrees as well as 300 diplomas from its short-term training classes in its 30-year history.[1] The Boone Library School remained almost unique before the founding of the People's Republic of China in 1949. At that time, the demand for library personnel was met mainly by short-term programs, like Boone's, at different levels.

The new Chinese government has made every effort to promote the development of libraries and library education since 1949. Not only were the number of libraries increased at a tremendous speed, but the nature of the library, its functions and services as well as library education itself went through radical changes. The Boone Library School was greatly expanded and attached to Wuhan University in 1952 as the Department of Library Science. Another Department of Library Science also appeared in Beijing University and both universities supplied four-year, full time college level library education in 1956.[2] During that period several other colleges, such as Jilin Normal University, Beijing Cultural College, University of Science and Technology of China and so on offered two-year programs at junior college level. Such training programs included night universities, correspondence schools, spare-time schools and a great number of short-term courses. Between 1949 and 1966, these universities, colleges and other training schools turned out more than 4,000 students, including 19 postgraduates, 1,542 undergraduates,908 graduates of two-year junior colleges and a number of correspondence students.[3] But, unfortunately, none of these programs lasted long enough for various reasons.

The Cultural Revolution started in 1966 was a great disaster that turned China into a blank nation intellectually. Libraries were recognized as centers of feudalism, capitalism and revisionism, with librarians called the "watch dogs" of imperialism.[4] As a result, all kinds of library schools suffered with classes suspended, teachers dispersed to unrelated positions and teaching materials destroyed.

The downfall of the Gang of Four and the end of the Cultural Revolution in 1976 brought fresh air to all educational institutions in China. 1978 was the milestone for the recovery and development of LIS education. It was in this year that Wuhan University added information science as another specialized field in its Department of Library Science, while, on the other hand, Beijing University offered LIS curricula for science students. In the same year, more than 10 other universities and colleges founded either a department of library science or specialized fields of library science and/or information science in their related departments. Among these institutions of higher learning, some were very famous, e.g. East China Normal University, Nanjing University, Nankai University and the Branch School of Fudan University. The China Society of Library Science (CSLS) was established and joined the International Federation of Library Associations and Institutions (IFLA) in 1981. As a result, international exchange and cooperation were improved in many fields. All the phenomena discussed above were signs that China's LIS education had come into a new period of development.

FACTS AND FEATURES OF THE DEVELOPMENT IN EARLY 1980'S

Raising the educational level of the entire Chinese people for realizing the "four modernizations", an ambitious program to modernize agriculture, industry, national defense and science and technology by the end of this century, was so important that library development and the role of libraries as a distinct and vital force in the modernization process of the century were once again recognized. The following are some prominent facts and features of the development of LIS education in early 1980's. Much Emphasis has been placed on higher education.

1. An Effective Education System in Library and Information Science Has Been Founded.

In order to train future professionals as well as to upgrade existing personnel, the LIS education, from a macroscopic view, should include various kinds of programs at different levels, offering training courses not only to library and information personnel, but users as well. After decades of preparation, an effective education system of LIS with its own Chinese characteristics has been founded. Such a system can be classified into three categories.

(1) Higher Education

First of all, I'd like to point out that China's higher education in the field of LIS includes a two-year junior college level, a four-year undergraduate level and a three-year postgraduate level, quite different from the situation in the U.S.A., the U.K. and Australia. On the other hand, most schools of LIS were established in comprehensive universities or large normal universities where many curricula of other disciplines can be absorbed. Students in these schools were mainly chosen from senior middle schools by the highly competitive college entrance examination. So, most of them had no library experience beforehand.

Secondly, the recent development in LIS education, I think, can be examplified by the progress achieved in Wuhan University and Beijing University. In 1981, both universities were admitted by the Ministry of Education to be the first two universities which could give the master of arts degree in librarianship to their postgraduate students in fields of foundations of library science, bibliography, library classification, theory of information science and reference materials written in foreign languages. The Department in Beijing University now has two divisions, one specialized in humanities and social sciences and the other in science and technology. The Department in Wuhan University was expanded to the College of LIS in 1984 with four specialized fields: library science, information science, archives management and book publishing and dissemination.[5] The College of Library and Information Science, together with its subsidiary Institution of Library and Information Science, is playing an important role in training qualified professionals and teaching staff of other departments

of LIS; therefore, it is gradually becoming the national center of LIS education.

According to an authoritative survey taken by the CSLS recently, there were 24 institutions of higher learning accredited by the Ministry of Education offering higher education in LIS by the end of July, 1985.[6]

(2) Secondary Education

Different work in library and information centers needs different types of personnel, so secondary education to train skilled assistants to professional librarians in academic, school, public and special (e.g. company, government and medical) libraries is one of the crucial aspects of the LIS education. Because no secondary library school was available for decades, much attention has been paid to secondary education by the provincial library and information centers around the country since the beginning of the 1980's. After dozens of secondary level training programs were offered in some provincial libraries, the first secondary school--Hunan School of Library and Information Science was formally set up in 1984.[7] Although nine secondary schools have reportedly emerged around the country, it is far from enough to supply professionally trained junior library staff to meet the challenge of the information age.

(3) Continuing Education

Obviously, library and information personnel are unable to keep up with the rapid advances in technological equipment in library and information centers. As a result of the information explosion and the rapid ageing of knowledge, on-the-job continuing education programs are badly needed. Correspondence courses, mainly self-directed learning with regular onsite visits by trainers and consultants, turn out to be one of the most important kinds of continuing education. The departments of LIS in Wuhan University, Beijing University and East China Normal University are offering correspondence programs in more than 40 major cities throughout the country with the help of local library societies. So far, 3,019 correspondence students have graduated while another 2,551 students have been registered in various correspondence schools of LIS.[8]

Correspondence study solves geographical problems and, consequently, supplies equal opportunities for those unable to attend formal education, such as disabled and middle-aged men or women with families. Some experts predict that, with the advent of some new technologies, the availability of resources in the continuing education centers could be greatly enhanced by means of satellite conferences in which programs could be beamed to distant locations. These could be transmitted by one-way video, two-way audio panel discussions in which experts could discuss a subject and have direct interaction by means of questions from the participants in other locations.[9]

2. By Renewing the Courses in LIS, Information Science Has Been an Integral Part of the Curricula.

With the development of science and technology, automated systems are now being introduced into library and information centers, which change the way people create, collect, organize, store, find, analyze, receive, disseminate and use information in making decisions. A number of large data bases have been created in main library and information centers which deal with information not only in its traditional printed form, but with non-printed materials such as microfilms, microfiches, video tapes, records and so forth. Microcomputers have been gradually used in acquisition and circulation systems so that users can retrieve information from large library and information centers through terminals. All these, together with the laser disc and COM, greatly increase the quantity and quality of information storage to solve the crisis of the "information explosion" and the shortage of stacks. It is expected that library and information centers will be automated and networked.

Serving the rapidly changing needs of users from all walks of life, library and information personnel should possess a wide variety of knowledge including statistics, system engineering, operations research as well as many basic courses in humanities, social sciences and natural sciences, but most particularly in information science. Many schools of LIS appear to have integrated information science into their course offerings more thoroughly than other fields. The procedure to reform the higher education curricula of LIS can be divided into two categories.

In the first category, a lot of departments compress the traditional courses in library science and incorporate the theories and skills of information science. For instance, the foundation course tends to cover both LIS; the cataloguing course includes the catalouing skills of making use of the Cataloguing-In-Publication (CIP) and the theory of the Anglo-American Cataloguing Rules, second edition (AACR2); the course of information sources in the humanities/social sciences/sciences includes machine-readable forms of material. In addition, many courses of information science such as introduction to information science, information storage and retrieval, management of scientific literature, basic principles of program design, files and data base management, data structure and audiovisual material management are being introduced in the curricula of library schools.

The second category is to train library and information personnel in a more specific way, according to their future responsibilities. Some departments divide their students into two groups. Students of humanities or social sciences study the research and services of Chinese rare books or social science/humanity literature, while students of science dwell on science and technology communication or the research and service of scientific literature. Besides, more elective subjects are offered by the department of LIS so that students can get a better idea of the work they will do in the future. A few schools place their LIS education in more specific areas, for example, the Bethune Medical College in Jilin Province emphasizes medical literature services.

Many experts suggest that the schools of LIS in China should offer master of LIS courses to those who have already received bachelor degrees in other disciplines like that in American or Britain. There are quite few schools offer such courses for at least one reason. That is, university graduates are greatly needed by the society; therefore, these students are asked to work in their own specialized fields.[10]

3. Great Achievements Have Been Made in LIS Research

Under the leadership of the CSLS and the China Society for Scientific and Technical Information (CSSTI), LIS research has been improved in every field since the early 1980's, and plays more and more important roles of guidance to library and information services throughout the country. The achievements of library and information research, first of all, were reflected in the expansion and development of its publications. Although no exact figures are available, there were approximately 95 journals by the end of June 1985 (60 major publications in library science, 28 dealing with the theories and skills of information science and the others in archives). Among them, the Bulletin of the China Society of Library Science (Tushuguanxie Tongxiun),the Bulletin of the National Library of China (Beitu Tongxiun),Journal of the China Society for Scientific and Technical Information (Qinbao Xiebao),Library and Information Services (Published by the Library of the Chinese Academy of Sciences), Information Science, Information Science Journal are important LIS publications. Of the 13,048 papers published in academic journals between 1949 and 1983, 64.4 percent appeared from 1980 to 1983.[12] Challenged by library automation and the multiple functions library and information centers play in national modernization, not only has the number of papers increased rapidly but the quality of the papers has improved as well. A great number of young graduates are the top publishers of LIS research as well as many senior librarians. Some of the experts use the communication of knowledge as the foundational theory of LIS; some of them make use of comparative method to analyse and solve the problems we are facing during the process of library automation. In addition, the theories of systematic analysis and quantitative analysis are introduced into the methology of LIS.

SOME TOPICS HEATEDLY DISCUSSED IN THE WORLD OF LIS RECENTLY

1. What is the Rational Frame of Qualified Professionals?

The modernization of library and information centers in China needs thousands of qualified library and information personnel. But the present situation is that high level senior librarians have aged with few potential

successors in sight. This requires a great effort to develop LIS education at different levels. Many educators and experts agree that we should cultivate three types of future professionals through different education programs as follows:[10,11]

(1) high level librarians who have received postgraduate LIS education, particularly with majors in theories of LIS and library management. They should be qualified to be teaching staff of college level education and department leaders of large-scale library and information centers (with several years practical work experience). Besides, they can be professional librarians, capable of selecting specific materials, answering complicated inquiries, as well as managing a specified division;

(2) intermediate level professional librarians who have college level training. They should pay attention to both theoretical and practical skills in order to be professional librarians (e.g. reference librarians, cataloguers) in large/middle-scale library and information centers, and, in addition, teaching staff of secondary library schools.

(3) library technicians who have a high level of general information gained through wide reading and are well prepared to do detailed work, so as to be good assistants for professional librarians.

2. What Are the Core Courses of the Higher Education?

Higher LIS education holds the core functions because of its long history, permanent teaching staff, and good awareness of advenced foreign methods and high level of academic research. Its quality has a great influence on secondary and continuing education, which, in turn, influences the functions of library and information centers in the information age. Although nearly 50 institutions of higher learning have departments of LIS or LIS as specified fields in related departments, no authoritative organization is responsible for the quality of the education. Consequently,core courses are needed to train qualified library and information personnel and they were heatedly discussed on the recent symposium of LIS education held by the CSLS in Chendu, Sichuan Province. Most delegates agreed that higher education should include at least ten courses. They were:

(1) Introduction to LIS.

This course is intended to give students a general idea of what the functions and aims of various kinds of libraries and information centers play in in the process of the modernization. The nature of librarianship, fundamental theories of LIS as well as the description of library materials, arrangement of materials, communication of knowledge and library network are also discussed.

(2) Classification and subject headings.

Nature of classification and subject headings as a tool for arrangement of library materials. Standard classification schemes e.g. CLC (China Library Classification), DDC, LCC, UDC, as well as some subject headings like the Chinese Thesaurus and the Subject Headings of LC. In addition, collection development, utilization of material sources and user services are also included.

(3) Cataloguing in both Chinese and foreign languages.

Introduction to book cataloguing, based on the Cataloguing Standard of Chinese Books and the Anglo-American Cataloguing Rules, second edition. Principles of main entry, authority files, descriptive cataloguing, and bibliographic sources for cataloguing are included.

(4) Bibliography.

Much emphasis is placed on modern bibliography, especially the management of secondary literature, the compilation of digests and indexes in many specific fields.

(5) Reference materials and services.

Introduction to reference work and the effective use of books, catalogues, and other materials as sources of information. Students will be instructed in the use of basic reference books and in techniques of reference services.

(6) Information storage and retrieval.

The functions and principles of information retrieval in library and information centers, and the use of some printed materials such as CA, SA, Ei, WPI, AD, PB,etc.

(7) Management of Library and information services.

Library system analysis, administrative structures and relationships in library and information centers, work study and job classification in library networks, and the evaluation of library performance.

(8) Collection development and user services.

Study of the characteristics of materials, both in printed form and non-printed form, stack management, systematic analysis of the library process from check in to shelflist, material weeding and resource sharing.

(9) Library automation.

Introduction to computerized circulation control systems, automated cataloguing, automated reference service and automated acquisition and serials control, as well as knowledge of the computer itself like computer hardware, software, data processing concepts and automated office systems.

(10) Computerized information retrieval systems.

The development of computerized information retrieval systems in other parts of the world, introduction to some effective on-line retrieval networks likeOCLC, WLN, DIALOG, MEDLINE, etc. Students are encouraged to design computer programs in their own laboratory.

3. What Is the Position of User Education in Library and Information Services?

"User is the King". Everything in library and information services is for the purpose of meeting the needs of users. The rapid advances of new technologies equipped in library and information centers result in most users spending much time but obtaining less. On the other hand, under the rapid ageing of the knowledge, users have to get new information from library and information centers continuously. So, the importance of user education is well recognized among library educators, and user education is becoming one of the crucial parts of LIS education. Some libraries offer guided tours for new users, especially for freshmen in universities or colleges, so as to help them get familiar with library facilities and catalogues . More and more universities and colleges give lectures about information retrieval and reference services to students. Such courses greatly improve the utilization of library resources and help people make more effectively use of libraries.

CONCLUSION

Great changes have taken place, and will take place, in LIS education in the People's Republic of China in the 1980's in a bid to meet the rapid increase in demand for qualified library and information personnel from all walks of life during the process of realizing the four modernizations. The challenge of the information age and a large variety of information needs from society have resulted in the expansion and development of library schools at various levels; therefore, an effective LIS education system has been founded. Furthermore, more information science curricula, such as information storage, retrieval and dissemination, data base management and scientific and technical communication are being included in LIS courses.

It appears to me, that the development of the LIS and its education suffered greatly from the ultra-leftist line during the so-called "Cultural Revolution" (1966-1976), and so there are also many things to be done, especially in secondary and continuing education. Nevertheless, LIS education in China is in its best era. The importance of information services and LIS education to our national modernization in the information age is now well recognized.

As Deng Xiaoping stated, education should face the modernization, the world and the future. I am sure that, under the guidance of government policy, LIS education in China will have a brilliant future.

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Motivation: The Illusive Link in Continuing Education

by

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Denton, Texas, USA

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MOTIVATION: THE ILLUSIVE LINK IN CONTINUING EDUCATION

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We meet today in celebration of yet another milestone in the long struggle to move continuing library education from stepchild status in our profession to rightful recognition as a significant priority for the library and information professions. If I may, I'd like to dedicate this paper to Dr. Elizabeth Stone, for several major reasons, but I'll only name two: 1) for her work in raising the monies and in organizing the first World Conference on Continuing Education which led to the establishment of a CE Roundtable in IFLA, and 2) for her landmark study on "Factors that motivate librarians to continue their professional development,"[1] and other research relating to continuing education. Her work has established and/or reinforced or introduced many of the concepts in this paper.

From Samuel Taylor Coleridge who said, "No man does anything from a single motive," to Oscar Wilde who said, "Whenever a man does a thoroughly stupid thing it is always from the noblest of motives," to Peter Drucker who said, "We know nothing about motivation; all we can do is write books about it" - the business of motivating is very elusive indeed.

What is it we wish to do when we wish to motivate? We want to impel, to induce, to incite, to stimulate active interest in. . .psychologists sometimes define motivation as the processes involved in arousing, directing, and sustaining behavior. Endless experiments have been devised to attempt to discover why a person works at one task rather than at others, or why she persists at one activity rather than moving on to other activities. When we define motivation in this way, we must remember that motivation is at best a hypothetical construct. That is, we cannot directly observe a person's

motivation; all we can observe is a person's behavior and the environment in which a person is active. It is something within the individual, interacting with the environment that we suppose arouses, directs, and sustains behavior. This something is not measurable, given our current knowledge.

A second problem associated with our definition of motivation is that we tend to overuse motivation as an explanatory concept. Because we have a burning desire to explain, be able to explain why people behave in certain ways - why did Maria drop the CE course? why did Helmut fail his exam? - we tend to forget that motivation is only one set of elements in an intricate web of factors determining behavior.

Wlodkowski in his discussion of motivating adults to learn describes it in this way:

> Motivation as a concept is difficult to operationalize. The choices people make in life and the degree of effort they will exert relative to those choices are influenced by a myriad of personal and environmental variables. Also motivation is tremendously unstable. People not only vary in their commitment to the choices they have made but also to the associated degree of effort they will expend on behalf of those choices. This is as true in learning as it is in work, play, or interpersonal relationships. To a large extent all civilized societies have developed oaths and contracts in respect for and fear of the instability of personal motivation.(2)

We also know that how well learning takes place, in the final analysis, can be only partly a function of motivational forces; it is also largely a function of inate and learned abilities. From many studies, however, we have learned that professionals want to be successful in learning activities that they have selected, that fulfill important needs, and that offer enjoyment in the learning process.

Using a theoretical framework closely related to studies by Herzberg, Stone found that the reasons why librarians become involved in professional development opportunities are concerned primarily with the content of the

professional development opportunity and its relation to the work process. The motivators toward continuing education related to achievement, recognition, the work itself, responsibility, advancement, and professional or personal growth.

The reason why a librarian is deterred from professional development activities (negative motivations) may be related to context or environment of the development opportunity and to extra job factors such as costs, available time, inconvenience of location, home situation, attitude of supervisors and administration.[3] In a later study on job satisfaction, Plate and Stone conclude that "Motivation comes only from within the individual, and all managers can do is create the environment and the job in which [this] self-actualization is facilitated."[4]

In developing the check list or questionnaire for purposes of our discussion today, it seemed that there are three major areas of concern for those who would promote and advance quality continuing education.

1. Motivating institutions/employers to encourage CE participation
2. Motivating librarians to attend CE events/take advantage of opportunities offered
3. Developing CE activities that motivate people to learn and to change patterns of behavior.

The first area, motivating administrators to encourage continuing education participation, was highlighted in Stone's study. She found that in the librarian's perception, administrators were fostering organizational conditions that were less than ideal, even minimal, for the encouragement of professional staff. The administrator was urged to develop a climate for professional growth in the library, to open staff meetings with free exchange of ideas, to be sensitive to opportunities for individual staff development, and to be a model for other staff in pursuing continuing education opportunities.[5]

Writing for the Australian Library Journal in 1983, Margaret Trask argues that "in many libraries there is no recognition of responsibility for staff development generally, sustained induction and training of new staff. Lack of this recognition can be detrimental not only to the individual staff member but to the quality of service delivered to the users of the library."[6] Trask also argues for the necessity for professional librarians to assume roles of mentor and advocate in the development of new professionals.

We have said that motivation comes from within, but in this case it seems obvious that continuing education for library administrators in developing an open management style, in the art of delegation, and in the importance of setting aside resources to use as incentives for staff development, will provide an appropriate climate. All of this can have a decided impact. In the United States in recent years the Association of Research Libraries training programs have emphasized such management training. The Council on Library Resources Academic Library Management Intern Program is also cited by Trask as an impressive (though expensive) way of dispensing these attitudes and competencies.

The second area, motivating librarians to attend continuing education events and take advantage of a variety of opportunities offered, is acknowledged to be primarily the responsibility of the individual. Freedom to travel, institutional climate, time, expenses all have a bearing, but ultimately continuing education must be self-directed. Stone found that most of the librarians' continuing education time was devoted to library association work; meetings and conventions; visiting other libraries; recruiting for the profession; and reading professional literature, particularly library journals. More than three-quarters had not engaged in research projects, half had not published any books in library science or in their subject specialization. Sixty-two percent did not have a self-learning agenda. . .and during the

preceding five years, three-fifths of a day per year was the median time spent in attendance at workshops or short courses.[7]

These data are not recent. One suspects that if a comparable group were surveyed today, that attendance at short courses and workshops would be sharply accelerated. . .and that other data might be quite different as well. The rapid assimilation of technology into library operations has made updating the only alternative to obsolesence.

The third aspect of continuing education (developing CE events that motivitate) is of concern to increasing numbers of librarians who find that a major portion of their responsibilities include the planning and delivery of continuing education and staff development opportunities. Moreover, there is an even larger group of librarians who recognize the need for improved skills in the discipline of continuing education as the community library becomes less and less a storehouse of materials, and more and more a center for lifetime learning. The term "continuing education" has only become widespread over the past ten or fifteen years, and a theoretical base for its practice is still being developed.

The work of Knowles, Tough, Kaye, Houle, Dohman, Lowe and many others worldwide is, however, providing new insights and some models for use and testing by continuing education planners. Some of what we have learned from these educators is indirectly reflected in the last part of the questionnaire. Knowles, for example, as part of his theory of andragogy and the need for the adult to be self-directed, argues that not only should learners be actively involved and participating in the educational experience, but they should also be able to prioritize their own learning needs (collaboratively) so that the instructor can modify the content appropriately.[8]

Wlodkowski provides 68 specific motivational strategies for an instructor to lead the adult student through six stages of a learning experience -

attitudes, needs stimulation, interest building and involvement, competence, and reinforcement. Yet when one is planning a presentation or lecture, the tendency is to focus immediately on stage 5 - competence - with perhaps a modicum of attention paid to stimulation, such as a bit of humor at the beginning or something of the sort. The pioneers in continuing education tell us that participants will enjoy the experience more, will be more motivated to continue to learn about the subject, if the experience is interactive. That is why when you arrived today, we attempted to act out Wlodkowski's theory, that is, engage your interest by asking you to fill out the questionnaire (stage 1). In so doing, we assessed your attitude, we sought your involvement; we perhaps provided stimulation. In doing this, your competence (stage 5) may well have been neglected. In the final part of the session following the comments of Dr. Matsumura and Dr. Mangla, we hope in our discussion to provide some positive reinforcement (stage 6).

Attempting to put together even this modest introduction to the elusive and often highly complex concept of motivation in continuing education proved to be somewhat frustrating since in the final analysis we cannot begin to control all the personal and environmental variables that influence a person's commitment to lifelong learning. Of the many factors cited by Stone and others as influential in creating that positive environment, I would single out the impact of becoming a model or mentor for employees and peers in pursuing continuing education opportunities. Elizabeth Stone is such a model. It is difficult to imagine how many librarians and others may have been (and will be in the future) influenced and inspired by not only her personal dedication to lifelong learning, but also her successful efforts to improve professional development opportunities for other librarians.

I am convinced that the secret of Elizabeth Stone's success is that she has always shared the upbeat approach of Michaelangelo to the subject of motivation. He said, "Lord, grant that I may always desire more than I can accomplish."

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CHECKLIST FOR EVALUATION OF THE CLIMATE

TOWARDS CONTINUING EDUCATION IN YOUR ORGANIZATION

Section I

1. Are opportunities to attend external continuing education meetings or enroll in courses available to all of the staff (not just top level administration)?

   Yes_____ No _____ Somewhat_____

2. Is financial help provided for those who attend meetings, workshops, or classes?

   Yes_____ No_____ Occasionally_____

3. Is time off granted without penalty?

   Yes_____ No_____

4. Does each new employee receive a thorough orientation to all aspects of the library operation?

   Yes_____ No_____

5. Are frequent and regular staff meetings held?

   Yes_____ No_____

6. Do staff members contribute to the agenda of staff meetings?

   Yes_____ No_____

7. Are staff meetings mutual exchanges of ideas rather than one-way transmission of information from the supervisor to the employees?

   Yes_____ No_____

8. Are occasional seminars and workshops provided at the library for development of staff?

   Yes_____ No_____

9. Are staff members who take courses, attend meetings, and generally work on improvement of their professional skills rewarded?

   Yes_____ No_____ Sometimes_____

Section II. Individual Attitudes Toward Continuing Education

While there are many factors involved in creating a positive climate for continuing education, it is generally agreed that primary responsibility for one's professional growth rests with the individual. Following are some indicators of active life-long learning and professional development. Check all those that apply to you:

_____ Regularly attend professional meetings

_____ Serve on professional committees, boards, hold offices

_____ Keep up-to-date in library and information science literature and research

_____ Have a plan for my own continuing education

_____ Often visit libraries and other information centers when I am traveling for various purposes

_____ Have taken a formal course or attended a workshop within the past year

_____ Finance my own continuing education when my library, university, or other agency is unable to help

_____ Conduct research in my areas of specialty

_____ Publish articles, etc., for professional journals

_____ Regularly recruit promising young persons for the profession

_____ Serve as a model or mentor for younger professionals

Section III.

Continuing education activities can be planned and structured in ways that motivate persons both to attend, and to learn more effectively because there is pleasure in the actual educational activity. Following is a checklist of factors often described as critical for good learning experiences. Please check those that you consider most critical.

_____ Competence/expertise of instructor

_____ Instructor well-prepared and highly familiar with materials so that he/she is able to freely interact with the participants

_____ Commitment and enthusiasm on part of the instructor

_____ Clearly stated learning objectives

_____ Warm, understanding personality

_____ Humorous, personable, uses many practical examples

_____ Strong links between subject matter and relationship to job situation

_____ Content adapted to learners' level of experience and skill development

_____ Content adapted to expressed interests of learners using a collaborative process

_____ Instructor understands learners' needs and expectations

_____ Assignments that are both challenging and realistic

_____ Provides positive reinforcement

_____ Frequent changes in tempo pace and activity

_____ Active participation on part of learners

_____ Use of experiential techniques such as case studies, simulations, problem solving, discussion, etc.

Of all the items listed in Section III, which three items do you consider most critical to providing an educational experience that motivates participants to learn?

1.

2.

3.

Country_____

Type of Library_____

Thank you for filling out this form. We will discuss many of these points in the session today. I plan to summarize these responses in a short article for the Continuing Education Roundtable Newsletter, so would you please leave this form at the door as you leave.

Thank you very much,

Brooke E. Sheldon

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52d IFLA General Conference
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24-29 August 1986

Division: Education and Research

Section: Library Schools and Other Training Aspects

PREPARING LIBRARIANS FOR THE 21st CENTURY:

IMPLICATIONS FOR THIRD WORLD COUNTRIES

ROSA M. VALLEJO
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and
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Meeting No. 88

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A B S T R A C T

The tremendous changes in the world of information will affect the education and training of librarians in the 21st century. Library education in developing economies in the 21st century should be articulated to the conditions obtaining in their respective environments. The librarian of the 21st century should have training in both traditional core subjects as well as in the new field of information technology. The information infrastructure - few libraries, small and outdated collections, lack of trained personnel - will not drastically change in the next 15 years or so. But librarians of the developing economies should be prepared to meet the needs of the bigger and more affluent libraries that are now computerized, are in the stages of computerization or are planning to do so. There should be courses in information technologies, information systems design, development, operation and maintenance, information systems planning and management, information storage and retrieval processes, abstracting, indexing, communication, user study, as well as public relations, marketing of information services, book preservation and conservation and library legislation and copyright laws. Librarians should also take courses on the socio-economic, political, and cultural aspects of their societies to have a better understanding of the information needs of their user clientele.

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PREPARING LIBRARIANS FOR THE 21ST CENTURY; IMPLICATIONS FOR THIRD WORLD COUNTRIES

by

Prof. Rosa M. Vallejo*

INTRODUCTION

There was a song in the 1950s which said that "que sera, sera, whatever will be, will be, the future's not ours to see, que sera, sera..." While the future is not ours to see, looking into what it would be like in the 21st century has been an exciting exercise of the mind since the world entered the decade of the 80s. For then it is just one step away into the second millenium. Thus, we read of "education in the year 2000, medicine in the year 2000, and libraries in the year 2000, and others.

Presenting a scenario of library education in the year 2001 is no mean task. One has to be a science-fiction writer or be a fortune-teller or sooth-sayer or be a Nostradamus to imagine what it will be like in the world 15 years from now. We see visions of the future in the manner which we want to see, coupled by a faith in the present and knowledge of what is that can be extrapolated into what it can be.

It is not really a hard task to do, because we see tremendous, drastic and compelling changes in the economic, cultural, political, psycho-social forces of todays life from which we may draw images of the future. The forces of change have brought great transformation in all areas of human endeavors. Nowhere are these changes felt and seen but in the last half of this century. Nobody and nothing is spared of the change, for change is the only certainty - and change is the only thing permanent on earth. These changes have led to drastic and dynamic changes in human behavior, in our mode of thinking, living and even loving, to such dizzying rate that if we do not

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provide the mechanism to adapt to these changes, we might all end up in the "snake pit."

US Senator Mathias[1] said that "we are living in one of the great transitional periods of human history. Rapid change is the hallmark of modern civilization. And the only certainty we can cling to is the certainty that if we do not master change, we will be mastered by it."

The information world is one area where there has been bewildering and dizzying changes, brought about by a colossal growth of literature. In the Book of Ecclesiastes, it is written that "making many books there is no end...", so there will be no end to the production of information by man, and there will be no end either to the task of collecting, storing and retrieving and disseminating the information so generated. Consider these figures:[2]

1. In the last 500 years, 12 million book titles have been published. More than 10 million of them in the last century.
2. Chemical Abstracts produced 300,000 abstracts in 1974, but only 54,000 in 1930, an increase of 246,000 in 44 years. CA took 32 years to produce its first million abstracts but only 18 years to produce its second million abstracts, while its 3d million abstracts took only 8 years and its 4th million abstracts is only 4 years.
3. Scientific publications has doubled every 15 years for the last three centuries since its beginnings in the 17th century. Where there were only 10 scientific journals in the 1600s, now there are around 100,000 titles and it is projected that by the year 2000 there would be 1.5 million titles. Scientific articles are now over 10 million titles since science began

and close to a million titles are published every year.

Boaz[3] noted that the number of pages printed by the American Institute of Physics doubles every 8 years since 1940; scientific and technical articles published in scholarly journals in the United States increased from 105,932 in 1960 to 155,345 in 1975; the number of new books in hardcover form in science published in a 10-year period increased more than 40%, while the patents issued in the same period, from 1960-1974 increased by 60%.

On the other hand, according to Holm,[4] each day, 300 to 400 billion strokes record printed information; census data runs in millions of items, 8000000 x-ray pictures are taken each day to record man's health, 70,000 patents are issued annually in the U.S. alone, while 100,000 technical reports are generated each year. Of the 2 million scientific and technical articles generated throughout the world, 450,000 are published in the U.S. and these appear in 30,000 scientific technical journals, and are covered by 3,500 abstracting and indexing services.

This tremendous growth of information has affected library and information services not only in the highly developed, industrialized societies, but also in the developing economies as well. The great advances in information technology, computer technology, tele-communication technology, microelectronics technology have of course greatly aided the information storage and retrieval processes. Otherwise, librarians and information specialists would be buried in the volume of information generated.

The figures just cited are indeed staggering and are noted here only to driven home a point - that there is indeed tremendous changes in the field of information which will affect library education in the 21st century. For if these figures are now realities, and accepting that the increase in production of information doubles every 15 years, then in the year 2000, all these figures would have doubled. How would librarians of the 21st century

cope with this information deluge? Would be technologies now available be further enhanced to deliver information needed at a faster rate. What would libraries/information centers be like in the year 2000? What would be the role of the librarian/information worker in the 21st century. What kind of training should librarians receive in the 21st century? The answers to these questions would provide the direction of library education and training in the 21st century.

What of the Future?

What would the world be like in the year 2001? There would be an increase of population in all areas of the world. At the present time, the world has a population of 5 billion people. But in the year 2001, world population is expected to be 10.4 billion, more than 4 times the population of 2.5 billion in 1950 and twice the population of today. Of the expected increase in population, 3.1 billion will be in Africa, Asia and Latin America.[5] These areas comprise the least developed, and developing economies of the world.

In education, with the increase of population, there would be an increase in enrolment dictated upon by a demand for educated labor. The academic setting will be drastically changed, from the cloistered/single campus to more multi-campuses in different geographical units. There will be changes in programs offered, and methods for delivering education services. Boaz[6] noted that "academic courses may be formatted into packaged audio-visual materials or into televised or computerized delivery system relying upon interactive access to computers." The universities of tomorrow, according to Dunn,[7] will "combine a medieval style of professorial tutoring with a futuristic brand of instructional delivery." There would be new links between students, faculty and the community. Fewer students will be attending classroom lectures, for they would be working independently. New information and communication technologies will affect learning. Higher education will

no longer be a monopoly of academic institutions, but high quality education will be available in other institutions, particularly in business and industry. Neelameghan[8] forsees that the advances made in communication, computer and information technology will greatly improve education, reduce its cost and make it generally and conveniently available to all. Education will move out of the campuses and will be dispersed to off-campus locations, research centers, service centers, and communication centers. This will be realised with the aid of newer information transfer media, e.g., television casettes, audio-visual media, computer databanks, etc. Electronic classrooms will replace the traditional methods of imparting knowledge through books, blackboards, lectures, etc. The electronic classroom will consist of a "set of individual or group consoles; display panels, various input and output devides and interactive access to computers."

The 21st century society will be a truly information-based society. The educational preparation of the human resources will center on the needs of the information society. The university of the future will be a creative center for the society it serves, it will be development-oriented, a center for high quality education that will form linkages with all sectors. Educating the information society will require three dimensional approaches: 1) it will provide general educational programs that will prepare students to be knowledgeable and useful citizens, family members, and workers. Courses in communication, problem solving, decision-making, societal issues, the arts, and human nature should be offered. The liberal arts or general education approach is the most practical for individuals in the information society; 2) the university of tomorrow will provide educational programs-both for young adults and mid-life career switchers - that can be used to gain entry to career opportunities; and 3) the university will provide educational programs for adults at all levels of instruction. Courses in basic skills will

be common. The university of tomorrow will be a place where adults go to learn, regardless of level.[9] The trilogy of university functions of instruction, research and extension services will be changed to conform to the new demands of the 21st century. Education in developing societies will have a more nationalistic approach, geared towards national development.

Information technologies will be very much advanced. The computer of tomorrow will be a supercomputer, one that will contain the "data memory equivalent to 16,000 human brains."[10] It will be approached by "push-button or typewriter key or a punched card... and will respond to speech"[11] Harmin further noted that "the computer will be able to "read" like a human being and at a faster rate, too. Such developments will obscure the technical distinctions between the typewriter, television, movies, telephone, even radio, records and tapes - will become interrelated and interchangeable.[12] Walter Baer predicts that microprocessors will be able to execute four million instructions per second roughly four times the speed of microprocessors today and 100 times faster than the small computers of the early 60s."[13] Advances in the computer and communication technologies in the year 2000 will provide for "ubiquitous computer terminals, networks of computers, access to large data bases and many new information appliances that can enhance the quality of (our) lives. The functions of communication and data processing will merge into a combined system in the year 2000, terminal equipments will become intelligent and the telephone will not only handle voice messages, but will also process and manipulate information in whatever manner the user desires."[14]

These are indeed exciting and almost unbelievable images of the future. What about the libraries of tomorrow? The library of the future will be fully electronic - [15]

1. users will be electronically scanned as they enter the library. The computer-based optical scanning system will produce data on

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how many used the library, when they visited, for what reason, and will prevent thefts and will also show who owes to the library.

2. books will be automatically shelved by robots that can read information on a book and automatically put it on the right shelf.
3. the electronic system will allow books to be sold to a patron who wants a particular book. The system will automatically charge the account to the patron's record and the library will be immediately order a replacement copy. Of course not all books sold, like rare books, etc.
4. the library of the future will have an incredible amount of video and computer material on its shelves, side by side with books which of course will never be superseded.
5. libraries of the future will be part of a vast computerized communication system which will enable one library to borrow from another library instantly and to query a large file of documents immediately.

Libraries of the future will also have so many computer-terminals that the new breed of librarians will be called the terminal librarians; professional education will constitute de-institutionalization of the profession - no longer what goes on in a library, but more on communication processes, both formal and informal, publication and dissemination processes, interpersonal communication, design and management of information services, data base management, electronic mail system, computer conferencing, word processing and text editing system and equipment, will be ordinary fares in the curriculum.

Lancaster[16] noted that in the last three decades, there has been a rapid decline of the artifact - particularly the printed book - as the primary device for storage and transmittal of recorded knowledge. He forsees that in the year 2001 -

1. publication in print on paper forms will be the exception than the rule;
2. most of the research literature will be in electronic versions; they can be used with domestic television receivers at home or home computers;
3. these journals can be accessed through the network of on-line service centers;
4. electronic reference tools, e.g., electrobooks, will replace the "reference books";
5. there will be on-line directories and referral centers;
6. there will be wholesale conversion of card catalogs to on-line catalogs, especially in academic libraries; these will include entries for materials in all forms; microform, tape, disk, electrobook, on-line data bases, and other electronic forms;
7. multi-source catalogs will be produced that will not only contain all materials held by libraries in the network, but also entries for all externally-accessible data bases, primary and secondary;
8. the concept of "main entry" in cataloging will disappear and entry can be accessed by many different approaches including complete or partial names of authors, editors, publishers, complete or partial titles, or any combination of these;
9. rapid increase in numbers of information professionals who are not affiliated with any library. This de-institutionalization process will produce "information officers", "information consultants", "information specialists". The term "librarian" will be used only for those affiliated with a library; and
10. all the major library schools will become schools of information science.

Implications for Third World Societies

Given the forecasts of what the future will be in relation to population, education, libraries and library education and training, how would developing societies cope with all these projected changes in the life-style of the world? There would be no possible problems for highly industrialized societies where information is regarded as a highly-prized commodity, vital to their existence. But in developing societies, there would be problems as there are problems today.

While the present conditions I shall enumerate would be applicable perhaps to all developing economies, I shall concentrate mostly on Southeast Asia with which I am familiar and with particular reference to the Philippines, a Third World country.

It is inevitable that in the life cycle of nations, some would emerge as super-rich, others affluent, some self-sufficient, a great many are under-developed and others are mired and shackled in poverty. This economic inequality is very much evident in the world today. When God created the world, He did not forsee that there would be divisive forces that would classify nations into First World, Second World, Third World, Fourth World, etc. In this global setting, information becomes a commodity readily available to those who can afford it, and inaccessible to those who cannot.[17]

Southeast Asia has become the focus of study for over four decades since the end of World War II which saw much action in Asia and the Pacific, thus bringing world attention to this part of the world. Many academic institutions in North America and Europe have established departments for Southeast Asia studies. Historically, this area consists of states that once were under the rule of western colonial powers. Geographically, SEA comprise two major areas: mainland SEA which consists of the soverign states of Burma, Malaysia, Singapore, Thailand, Laos, Cambodia, Vietnam; and the island SEA which includes

Indonesia, the Philippines, the states of Sabah and Sarawak Federated with Malaysia, Brunei, the Portuguese colony of Timor and the territories of Papua and New Guinea. These countries are part of the developing/less developed countries of the world which is estimated to contain 75% of the world's population. While these states are unified by a common geographical location, yet they are as diverse in historical roots, culture, socio-economic background, education, religion, etc. brought about by the different colonial powers that have imposed its own identity on these states for quite a time until each have attained a more or less independent stature.

Generally, the following characteristics are common to these states: low GNP ratio, low per capita income, low literacy rate, high infant mortality and short life span expectancy, high rate of population growth, inadequate communications system, predominantly agriculture-based societies, limited supply of technical expertise, low capital supply, and inadequate facilities for development. These socio-economic factors affect the political development and stability of most of these states. It is to be noted that the historical linkages of these states to their former colonial powers are still strong today. While they belong to the LDCs and DCs of the world, they are also at various stages of growth and development.

Against this backdrop of seemingly poor economic environment, what kind of libraries, and librarians will there be in the 21st century? What kind of training would be needed for librarians to meet the demands of the users of the 21st century?

Except for a few states, like Singapore and Malaysia, the other SEA countries have not progressed much economically. Some of the countries have incurred huge external debt. The Philippines has an external debt of almost $30 billion and the interest payment alone weighs down on a country that has

myriad internal problems brought about by a previous corrupt regime. In this context, libraries suffer, for these countries have low priorities for libraries and the provision of information. Attention is focused on the more productive aspects of society which will bring in much needed revenue to pay off outstanding debts and service the more pressing needs of the country.

Libraries in third world countries are in a poor state of development. Libraries are not only few, but they contain very little materials that are more often out-of-date and not relevant to the needs of various user groups. Libraries are not given the proper support and they suffer from starvation budgets that are responsible for the very poor and inadequate library collections. There are very few excellent collections and these are mostly in academic and special libraries which are concentrated in the urban areas. In the rural areas, there are very few libraries, which can cater to the needs of the rural people. Libraries do not get the requisite support because administrators do not see the importance and value of libraries in society. Most of them view the library as a mere accessory. At the same time, rural folks do not go to the library because they have no need for them. They are more concerned with the basics of survival, of where the next meal will come from. Since most of the population are illiterate, they have no use for libraries. They have not developed the love for reading, for how could one enjoy literature when the stomach is grumbling? The prohibitive costs of books and other reading materials have also affected the reading habit. In this atmosphere, library planners should look into what Mchombu calls "the librarianship of poverty." He said that ' . the chief factor in determining the information work in developing countries should be poverty rather than affluence."

Library development in developing countries is going on very slowly. I perceive no radical changes in these libraries within 14 years from now. There will be the same organizational structure, the same traditional methods of information storage and retrieval, while mechanization, automation, and/or computerization has already been incepted in some of the bigger libraries in the urban centers in these countries, this will not be the general situation in the countries in SEA. If ever, this will only be realized in the academic and special library fields. Small libraries will not be able to use computers not only because they are expensive, but because supply of power is almost nil. Electrification is still a big problem in the Asean region. At the same time, collections are so few, that immediate access to them can be done by browsing through the collection instead of through the use of even microcomputers.

I feel that the exciting world of information technology in the world of tomorrow as envisioned by the futuristic writers, some of which I have enumerated in the first part of this paper, will be realized in the developing countries within the next 25 years or so but will be slow in inception and acceptance. Tradition is deeply entrenched among the peoples of the developing countries that there is almost always resistance to change, hence, change takes place very slowly. Take the example of the Philippines. As early as 1972 a course on information science was introduced by the Institute of Library Science to make the librarians aware of the new field of information science. Subsequently, in 1975, the Institute offered a series of summer institutes on various aspects of information technology to echo the training I received in Katowice, Poland in a seminar-workshop sponsored by Unesco. Many of our colleagues laughed at us for offering these courses when we still did not have computers in libraries. They said that we shall never have these machines in

the next 50 years or so. We, however, continued with our mission to bring to our students the latest in the field of library and information science. While computers were first introduced in the Philippines in 1960 at the Bureau of Lands for land survey applications[19] and subsequently used extensively in business and industry, its use in libraries was only realized when the Institute of Library Science acquired some hardware for use in the Post-Graduate Training Course for Science Information Specialists in Southeast Asia in 1982. This project started in 1978, but it was only in 1982 when microcomputers were first used for library training. For the period 1978-1982, the main frame computers in the National Computer Center Institute at Camp Aguinaldo, Quezon City wwere used by the students for developing case studies and for hands-on experience. Even the University of the Philippines was late in using computers for academic applications. Today, there are a few libraries using computers, such as the Agricultural Information Bank for Asia (AIBA), International Rice Research Institute (IRRI), National Science and Technology Authority (NSTA), Philippine Council for Agriculture and Resources Research and Development (PCARRD), the Southeast Asia Fisheries Development Center (SEAFDEC), Technology Resource Center (TRC) and the Transport Training Center (TRC), to name a few. The University of the Philippines Library acquired its first microcomputer only in 1985 and will be getting more for its project of computerization of library services. There are now over 6000 computer installations in the Philippines, but only a handful are used in libraries. The ILS acquired two IBM PC compatibles in July this year.

This trend is also evident in Thailand, Indonesia, Malaysia and Singapore where microcomputers are now being used in the bigger libraries particularly in the academic libraries.

I interviewed our foreign students[20] from Thailand, Indonesia, Sri Lanka, Nepal, Sudan, China and India and they envision that libraries in their respective countries will make use of the new technologies to improve library services, deliver information at a faster rate, more efficient organizational structure, and more trained personnel to meet the increasing demands of users. They believe that many libraries will be computerized because their government will place more emphasis on libraries because of improved telecommunication services. I also solicited the view of my Filipino[21] colleagues on what they perceive the libraries/information centers would be like in the year 2000, the trend in communications, storage and retrieval of information, the role of the librarian/information worker and the kind of training they would need. This is summed up as follows:

1. there would be a movement towards a conglomeration of libraries either in cooperative or coordinated structures;
2. more coordination of services through networking, consortia, or other means of resource sharing;
3. greater demand for information from both the primary clientele and non-primary clientele;
4. staffing in the libraries of the 21st century would involve information handlers who would be trained to handle information requirements at all level of needs;
5. more libraries, particularly the academic and research libraries, would be mechanized/computerized because of the complexity and volume of information available, and the demands of the user population;
6. information communication would still require use of print and paper;

7. the information worker of the 21st century would be both a subject specialist and an information scientists/technologist - "a pop designer, sniffer, mixer, gate-keeper," custodian, playing whatever role is required; and
8. training of the information worker would be at different levels - for the information manager, information technologist, information disseminator, information keeper/storer, and other auxiliary workers in the information field. This would require a unified curriculum from which an array of subjects would offer the best training for each level.

IMPLICATIONS FOR LIBRARY EDUCATION

Library education should be articulated to the conditions obtaining in the developing countries now and in the coming years. There should be training in both the traditional core subjects and in the new field of information technology. The information infrastructure - few libraries, small collections, etc. - will not drastically change in the next 15 years or so, hence there is still a need for the librarian/information worker in developing countries to be trained in collection development, classification and cataloging, reference work, library management, etc. To meet the needs of the bigger libraries which are now computerized or are in the stages of computerization or even planning to computerize, courses in information technology will be required. The library and information personnel will be called upon to develop information storage and retrieval systems, provide different computerized services such as SDI, referral, etc., carry out on-line literature searches, organize/create databases, etc.

Therefore, courses in information technologies, information systems design, development, operation, and maintenance; information systems planning

and management, information storage and retrieval processes, abstracting and indexing, information generation, communication, user study, etc. should be included in the curriculum.

In 1985, Unesco sponsored a seminar on curriculum development in information studies[22] in answer to the great demand in the region for such a course among the developing countries. The seminar recommended a model curriculum in information studies which contain the following modules: 1) information in social and communication context, 2) the information user; 3) information and data sources and information service; 4) organization of information; 5) management; 6) information technology; 7) research methods; and 8) elective courses.

There should also be courses in public relations, marketing of information services, book preservation and conservation and legislation and copyright. Librarians in developing countries usually occupy a low position in the professional ladder; they are not given the recognition that they deserve and the salary commensurate to their training and expertise. Librarians, therefore, would need to exert more efforts to sell the library to their publics. This would also involve marketing skills, Archival courses are also needed to preserve and conserve the few resources available in the libraries of the developing countries.

EPILOGUE:

I had written in 1981 "that our generation is faced with many problems of urbanization, modernization and rapid technological changes. We are witnesses to unprecedented increase of population, of malnutrition, inbalance of the ecological system, energy crisis, political upheavals, the emergence of new fields of knowledge and new scientific discoveries, radical changes in

the educational system, and a growing literate youth."[23] Our librarians should be aware of these developments and should concentrate their efforts in helping solve these problems through the provision and dissemination of appropriate and relevant information. They should be responsive to the challenges of the coming century.

German Escorchia of Colombia said that:

> The underdeveloped nations of the world today are those who came too late to their industrial revolution; the underdeveloped nations of the future will be those who came late to the information revolution.[24]

Let us, therefore, be not late in assessing, appreciating and using the new technologies, least we perish, for "where there is no vision, the people perish."

Thank you.

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DIVISION: Education and Research.

Section : Library Schools and other Training Aspects

The Impact of Technology on the Education and Training for Librarianship

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Meeting 115.

5127

Preface.

The essence of the activities of libraries and the like organizations can be represented by collecting, processing, and disseminating recorded information, or more strictly speaking, recorded sources of information. Though the objects of collection are materials, the method of recording is determined by technique or technology available in a particular period. The method of processing is decided by the capacity of man's thinking and the characteristics of the system of symbols or codes on the one hand, and is supported by tools of various kinds used and the technique employed to utilize them effectively on the other hand. Methods and means of dissemination are selected in terms of natural and social environment in which a library is located, the kind of users and the pattern of their behaviour, and the means of transmission and communication and the cost required, and transmission or communication may be considered as a sort of technique ortechnology having been adopted by society.

If the aforementioned view is acceptable, then libraries are conceived as having had close connection with techniques of many kinds and technology of different sort in the long span of period since the ancient age when they are originated. In the first place, no recorded materials could be produced where there was no technique of writing and drawing. To what extent the meaning of technique and technology has been discussed, however, from the standpoint of library activities? (1) This is the reason why I decided to take up the problem of technology in this paper.

" Technique " generally means some sort of art or skill specific and fixed. Therefore, "technician" is defined as a person who has and is able to practise such art or skill. Whereas, "technology" is not, as is defined by M. Heidegger, a simple and easily

identifiable human behaviour. He says, "The essence of technology is by no means anything technological."(2) Technology provides such firm basis that individual techniques come into being corresponding to given conditions, accordingly it is deeply rooted in man's essence and is to be considered as a fundamental working to make things and matters function for man's objectives.

The problem now libraries are facing and is recognized that it is of great significance to the education and training for librarianship is that connected with technology in the domain of information at large. However, on the one hand, information is something non-materialistic, and on the other, information technology displays and functions in concrete manner as having been represented by various information systems or wordprocessors. Present confusion in tackling issues of technology and its import on libraianship seems to be caused by the failure of clarifying the above mentioned relation..

In what follows I will try to discuss the problem of the impact of technology on the education and training for librarianship at present and in future.

1. The content of library and information science

In discussing the problem of education and training for librarianship, it semms of necessity to define library activities or library work in a realistic way.

At present, few will think that the library activities are represented by conventional library routine works excepting a few rare cases. In most instances, the library work is expressed as library-information work, and the persons who engage it are called

librarians and/or information specialists. However, the definition of the term "information" used in these examples is not provided explicitly by educational institutions. According to the research conducted by Cronin in England, only 6 institutions out of 17 prepared definitions. Among them, City University proposed a definition which reads, "information science is concerned with the properties of information and the characteristics of information transfer process." For the Polytechnic of North London the essential aspect was "communicating information" but, reflecting its approach to the teaching of librarianship-information studies, it stressed the need for "providing information services for specialized communities." Interesting definition is the one by Brighton Polytechnic which reads " the collection, organization and exploitation of materials for information and study." (3)

In this Brighton's definition, the concept of information is clearly differentiated from the concept of materials, and librarianship-information science seems to be recognized as a discipline which grasps information as the object of the study of materials.

In contrast with the result of this research, the definition of library and information science proposed by most educational institutions is based on the interpretation of the science as the integrated result of the traditional library science and the new information science. The trend and thought of this kind may be historically formed by the idea of documentation as a mediating force.

Documentation emerged, without saying, to develop ways and means

to provide specialized information to users to cope with the rapid growth of science and technology, and later took the course of mechanized documentation in which computers and other information machines were emplyed. Following this movement, because of the improvement of computer capacity and the increase of availability of informational machins, methods and means developed by documentation of handling and processing recorded materials and their contents were computerized. This achievements are considered to have formed the essential part of the information science in library and information science.

American Documentation Institute changed, as is well known, its name to American Society for Information Science in 1968. In this occasion, it announced as the purpose of the Association the following statement: "as a non-profit organization...dedicated to the creation, organization, dissemination and application of knwledge concerning information and its transfer." (4) The gist of this statement seems to be on the same line expressed by Brighton as cited above.

As has been discussed above, it is conceivable that there are two interpretations of or approaches to the information in library and information science. Firstly, without asking rigorous definition of information, the approach is to realize the standpoint to disseminate information to meet the needs with effectiveness. The second approach is to clarify the way of expressing information per se and the nature, essence and function of symbols, codes, languages, and logic which are closely interlocked with the expression, and to materialize the result of study by way of utilizing computers and other informational machines in accordance with the content of each specific information.

In any case, when we handle information which is invisible and can only be shaped in our brain, we can not ignore the issue of man's "intellect" and "intelligence." From this view poimt, library and information science can be defined as a discipline devoted to "the establishment of a new law of man's intelligence based on the new concept of intelligence. " (5)

2. The content of the education and training for librarianship

According to the policy statement adopted by the ALA in 1970 on "Library Education and Personnel Utilization" the content of which is quite similar to the 1972 Standards, which was decided to answer to the changing nature of the profession and the expansion of library school curricula to include information science, "...the term librarianship ...is meant to be interpreted in its broadest sense as encompassing the relevant concepts of information science and documentation. Whenever the term libraries is used, the current models of media centers, educational resources centers, information, documentation, and referal centers are also assumed. Library service is understood to be concerned with recordable knoledge and information in their several forms--their identification, selection, acquisition, preservation, organization, dissemination, communication and interpretation, and with assistance in their use ..." (6)

In this statement which was prepared approximately 15 years ago, the orientation of the study of information in the education for librarianship was made clear, were it not satisfactory.

In Japan, however, the only one course out of 23 courses opened in 4 year university in 1977 was Joho-kanri(documentation),

and was provided in 38 out of 131 institutios(national, public, and private) according to "Reports on the Analysis of Documents and Materials for Library and Information Science Education" by Takayama.(7)

In the United States, University of Pittsburgh changed the name of the schhol to library and information science in 1964. In 1970's , many more schools started to change their names and in 1978 over 30% of total schools adopted the term "information" as their school names. In this period, the School of Library and Information Science, Drexel University, opened courses of information science which occupied more than 57% of the total courses. The average number of courses related to information science was about 16% of the total number of courses in 19 schools surveyed. (8)

Of the OECD program, which was designed for training information specialists, courses such as databases, information storage and retrieval, theoretical and technological methods were provided but there was no course generally included in traditional library education. (9)

Examples of training courses in some professional organizations other than the educational program of library and information science in universities are as follows.

JICST published 21 articles in series in its organ periodical for two years covering 1966 and 1967. These articles were on the subjects selected from the training courses which were held 42 times.

Of these subjects, the followings were decided to constitute the content of the training in 1969 to let the trainees understand the concept of information and its practical application.

1) Introduction to information activities

2) Production and distribution of information

3) Processing of information

4) Information storage and retrieval

5) Application of computers to documentation (10)

After examining the content of some of these subjects, it can be pointed out that the difference between what is described in recorded materials and information is not made clear.

In 1971, the overall revision of the text was made to make it more easily understood and resulted in the following.

1) Outline of information activities

2) Production and distribution of information

3) Patent information and patent system

4) Selection and acquisition of informational materials

5) Processing and preservation of materials

6) Micrform materials and photoreproduction

7) Outline of information processing

8) Classification schemes

9) Keywords and thesauri

10) Abstracts and abstracting

11) Secondary materials

12) Outline of information searching and research method

13) Information retrieval

14) Card system

15) Application of computers to documentation (11)

In this text the application of computers was discussed in full scale for the first time, and the total body was constructed

with library science, documentation, and information science in the meaning of computer science. The training courses of JICST thereafter have indicated the tendency to stress the significance of computer systems, especially after the realization of on-line information service.

National Diet Library also has been carrying out training courses for the new emplyees evry year. The subjects related to information science in 1981 were as follows.

1) Mechanization of library work and computers
2) Introduction to computer systems (VTR)
3) Unesco and library-information activities (VTR)

After this year the program was expanded by adding;

4) Library network
5) Trends in libraries, information and publication world (12)

If we try to re-examine the present position by looking back upon the history of the education and training for librarianship, and to establish a future policy, it will be necessary to identify the way to build up our curriculum. Moreover, we shall be forced to define library activities as its basis in the first place.

As to this, J.E.Sabor mentions;

"We can properly ask how far the library is a mere repository, to what extent it is an element in the educational process, whether or not it is a force in social and economic development, how it operates in the creation of culture and, finally--a question of key importance today--what part it plays in the complex sphere of information." (13)

The questioning of the substance of libraries and their activities by Sabor implies that a library is not an organization of simple structure but an organism with complex structure reflecting the complex and complicated phases of civilization and culture of today's world.

Will the structure and function of this complex organism be neatly put in order by introducing information technology and be logically re-organized through the assistance of computers? The concept of library engineering in the same meaning as education engineering, if it were not explicitly stated, has been infiltrating into the library world. As its evidence, jargons and peculiar ideas which sometimes can hardly be understood by even library professionals , are coming to be popular among certain group of people and in some occasions these jargons and ideas seem to be considered as the symbol of leadership in the world of libraries.

In addition to that, a situation is emerging as described by the same author: " The scientists, in their turn, hurried by the need to have good and rapid information available, have also invaded the domain of librarianship to support those who favoured radical reorientation of library science and are pressing the schools to recast their curricula." (14)

However, it is not an easy task to realize the complete revision of curricula and to carry it out in universities and other educational institutions. There are two reasons for that: one is that education is in the hands of faculty members in most cases and it is difficult to expect a drastic change of their senses and ways of thinking and thoghts in short length of time. The other is that students are being educated and trained during a certain planned span of period and a sudden change of education

policy and program will cause confusion among them.

As a concrete example, please let me allow to quote my own experience in my university which was established with the idea of realizing organic integration of library science and information science and introduced a computer system from the outset.

It was strongly felt among the faculty members that it was of most importance to do a continuous examination of the curriculum even immediately after the university had started. The education committee made great efforts to meet the request. However we concluded that it was requsite to form a working group to identify problems to be solved, to exchange opinions frankly, and to clearly understand the mutual relation among related courses. More than three years have passed since the first working group started its activity. At length exchange of opinions among faculty members became smoothly done and the common understanding of the nature of information science in library and information science was formed. That is, the information science is not a mere computer science nor it stays in the domain of communication technology but it has to be based on thinking and understanding of man's thinking and emotion, of of language and other means of expression, and of comprehension and manipulation of systems of symbols and codes.

As the consequence, thourh still tentative, we set up five categories of courses which constitute the curriculum.

1) Basic courses of library and information science
2) Relation between societyand information
3) Information sources and materials
4) Organization of information
5) Library and information systems

2) Cognitive theory of information

Master of Arts Program of the University is composed of eight categories.

1) Basic courses of library and information science
2) Cognitive theory of information
3) Construction of information
4) Society and information
5) Information media
6) Systematization of library and information sources
7) Utilization of information machins
8) Information retrieval

The structure of the above mentioned curricula has to be examined and criticized by educators in the same field and professional staff members of libraries, information centers and in information industry. However, because of the reasons mentioned already, we think that curriculum is to be constructed on compromise in its good sense, namely, compromise among courses which comprise the content of library and information science, compromise among beliefs and thoughts of faculty members, compromise between the ideal and the real world, and compromise between Our behaviour and time element.

3. Information society, technology, and education and training for librarianship

Kagaku Asahi, a monthly journal of science, published in September 1969 was a special issue devoted to " Information Society and Man." K.Nakajima, a critic, says in one of the articles: " How long will the term Information Society be prized among people? Whatever the expression may be, the tendency of dependency on machines and artificial products now apparent in our society may produce a new public nuissance. Quantity of infor-

mation does not necessarily create value. I am wondering whether the problem of value in its widest meaning can keep abreast with the accelerative speed of the present change. For judging value examination of analogue type is necessary in addition to calculation of digital type...what is needed in value judgement is to foresee the result more practically and intuitively in addition to the exactitude gained by increasing the number of digits. ..." (15)

The Feburuary issue of the same journal in 1979 published 15 years after the cited publication devoted 50 pages to the issue titled " Surging Information Revolution--The wave of New Media". Nearly all articles were filled with optimistic opinions, and only one article which gave warning to us was titled " Protection of Privacy, don't be too sure of it." (16)

The idea of information revolution, which gives rosy impression to some people, may be a way of realizing the world of G. Owell's "1984". The two-way TV can be considered the same as the telescreen in its substance.

Was the relation between man and information pointed out by Nakajima broken into pieces by the wave of technology? Was the meaning of value judgement absorbed in the mass of data appearing and disappearing on the video terminals? As was questioned by Sabor, if we believe that libraries are deeply related to culture and education, and that culture and education are man's unique activities, how should we understand the meaning of information technology from the standpoint of libraries?

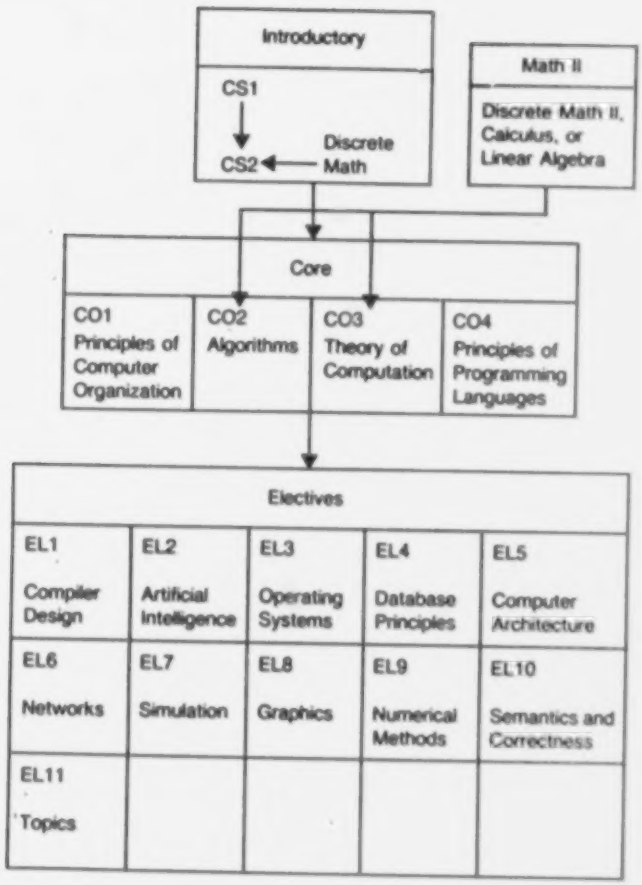
In "Curriculum change for the nineties" edited by E.P.Dudley and others, a school head expressed his opinion as follows: "How do we in the schools keep ahead in teaching the new technology? Manifestly not by considering the technology alone, but its immense implications." (17)

As is stated above, we can not treat technology as an independent subject in our curriculum. As I mentioned in the preface technology has to be interpreted something in close connection with the essence of human being. Information can not be separated from man's thinking and judgement. Therefore, the meaning of information technology has to be found in its tie with man's activities and its function to promote them and to contribute to the glory of humanism.

As to this point, it will not be meaningless to examine a recent trend of the education of computer science which forms a basis of information technology. (see the figure on next page)

The program indicates that starting with mathematics which is the product of man's thinking in the purist form it includes various elements related to the essence of man such as algorithms, calculation, programming language, semantics. Needless to say, computer science was developed to find theoretical methods to put man's brain work into the vessel composed of electronic parts besides the study of computer as hardware.

Up to now, I have discussed ways to take technology into the education and training for librarianship and the possibility of doing it. Here, I dare to propose the constituents of technology from the poin of education and training refering to the computer science education program.



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Note: 1. CS---Computer Science

2. CO---Core Courses

3. EL---Elective Courses

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1) Structure and function of computers

2) Purposes of applying computers

3) Methods and means to make computers work

4) Systems design of applying computers

5) Methods, channels, and media of communication

6) Methods and means of data communication

7) Understanding and utilization of systems of symbols and codes

8) Utilization and creation of media

9) Analysis and evaluation of information

10) The world of man and the sphere of information

4. Conclusion

The information society formed and realized by communication theory, cybernetics, rapid development of computers and their wide use, the development of new methods of communication has been influencing the world of libraries whether we like it or not.

Has not this kind of strong impact upon man's intellectual activities been observed in many cases in history as represented by the innovation of printing, photographs, motion picture, typewriter, and sound recording system? The result of all of these innovations was utilized as tools for new intellectual production and for improving man's intelligent activities.

In examining the relation between the information technology and libraries and its impact on the education and training for librarianship, we may be required to interpret this technology as a new method to furnish a new tool for libraries and to think of the ways to put it to effective use to achieve the fundamental aims of libraries. Technology does not change the substance of libraries or conquer them but it is the role of libraries to utilize it for fulfilling users' needs.

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